BOTTLE

Technical Field

The present invention relates, in general, to a bottle equipped with a mixing means containing an additive and, more particularly, to a bottle equipped with a mixing means

Background Art

For sale to general consumers, coffee drinks or carbonated beverages such as soda pop are stored in stores in closed containers such as cans, plastic bottles, and the like. Alternatively, the beverages are sold while being stored in open disposable containers at, for example, coffee shops or snack corners of theaters. Recently, a market for hybrid beverages, which combine one material with another different material, has been gradually growing in the world. In hybrid beverages, consumers may want to mix general beverages with different materials according to their tastes. For example, coffee with cream or ice cream is popularly sold. Also, people drink soda pop with ice cream added thereon.

Most beverage articles currently for sale, however, are difficult to apply additives to. Because the beverage

articles displayed in markets have contents in closed containers, additives must be added externally in addition to being prepared separately. In the case of coffee shops, coffee, when ordered, is provided with ice cream in arbitrary amounts which are usually decided by the seller, but not by the customer. Thus, the customer may not be satisfied with the coffee drinks provided.

As for the coke float which is soda pop with ice cream added thereon, the ice cream mass floating on the soda is readily dissolved to form a milkshake-like beverage.

Disclosure of the Invention

Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a bottle in which two or more different materials can be effectively mixed in addition to being independently stored.

Another object of the present invention is to provide a bottle with which the user can mix an additive with a base material at an accurate ratio and enjoy new and various tastes resulting from the mixing.

In order to accomplish the above object, the present invention provides a bottle, comprising: a bottle body

having a mouth, with an external thread formed around an external circumferential surface of the mouth; an accommodation space for containing an additive therein and allowing contents influent from the mouth to be transferred thereto via a predetermined passage; and a mixing means, removably combined with the bottle body, for discharging the contents passing through the accommodation space, in accordance with a first aspect.

The objects of the present invention could be accomplished by a provision of the bottle in which the mixing means comprises: an adaptor removably combined with the mouth of the bottle body; an additive container, defining the accommodation space, which is removably combined with the adaptor at one side and is open at the other side; a communication means for optionally communicating the accommodation space with the interior of the bottle body by means of rotation of the additive container; a cover, provided with at least one discharging port through which the additive is discharged, for openably covering the additive container; and a top cap for covering the discharging port.

It is preferred that the adaptor comprises an outer cap having an internal thread engaging with the external thread of the mouth, an inner cap, extending from an inside of the outer cap in an axial direction, which is inserted into the mouth by pressure and provided with a

communication hole at the bottom, and a connection portion extending from the outer cap in an axial direction, with a locking groove formed around an inner circumferential surface thereof, and the additive container comprises a first protrusion which extends downwards and has a locking ring around an external circumferential surface thereof, said locking ring being combined with the connection portion, and a second protrusion which protrudes from the first protrusion in an axial direction, is inserted into the inner cap, and has a drain hole corresponding to the communication hole at the bottom.

In the bottle, the communication means is structured in such a manner that the second protrusion of the additive container is in surface contact with the inner cap of the adaptor and the communication hole and the drain hole, both arranged in the surface contact area, are coincident with or arranged crosswise with each in response to rotation of the additive container.

In the bottle, the additive container is integrally provided with a guiding conduit which extends in an axial direction from the first protrusion and has a plurality of spraying holes formed therethrough.

It is possible to form the guiding conduit separately and to tighten the guiding conduit to the inside of the first protrusion through a screw-type engagement.

In accordance with a second aspect, the objects of

the invention can be also achieved by providing a bottle equipped with a mixing means, the mixing means comprising: an adaptor, including: an engagement portion which can be removably combined with the mouth of the bottle body, a cylindrical support which extends from the engagement portion at a predetermined angle in both externally radial and axial directions, with a locking ring formed around the external circumferential surface thereof: a lower blocking panel which blocks the flow of contents in the axial direction: and a lower shutter ring having a communication hole, integrally provided at the center of the lower blocking panel; a cylindrical additive container, removably combined with the adaptor by locking the locking ring with a locking groove formed around an internal circumferential surface of the cylindrical additive container, including an accommodation space which is open at one end to contain one or more additives therein, an upper blocking space which is integrally formed, defining the accommodation space 302 in a transverse direction, and an upper shutter ring which has a drain hole and is integrally formed at the center of the upper blocking panel; a cover, provided with at least one discharging port through which the additive is discharged, for openably covering the additive container; and a top cap for covering the discharging port.

In this bottle, the lower blocking panel of the adaptor runs upwards at an angle to the center while the

upper blocking panel of the additive container runs downwards at an angle to the center.

In this bottle, the lower blocking panel of the adaptor runs upwards at an angle to the center while the upper blocking panel of the additive container runs downwards at an angle to the center.

The lower shutter ring is in a cylindrical form extending downward from the lower blocking panel, and has communication holes at the bottom and lateral sides thereof, and the upper shutter ring is in a cylindrical form extending upwards and has drain holes corresponding to the communication hole at opposite ends and lateral sides thereof.

An extension part to be inserted into the upper shutter ring is provided atop the lower shutter ring.

Also, the lower blocking panel protrudes upwards from its central portion to form a hemispheric lower shutter ring having two or more communication holes which are formed at equal intervals around the axis, and the upper blocking panel protrudes upwards from a central portion thereof to form a hemispheric upper shutter ring which is in surface contact with the lower shutter ring and has two or more drain holes which correspond to the communication holes at equal intervals around the axis.

In accordance with a third aspect, the objects of the present invention could be also achieved by providing a

bottle equipped with a mixing means, the mixing means comprising: an additive container, including an engaging part removably combined with the mouth of the bottle body, a cylindrical support extending outward in a radial direction from the engaging part and in an axial direction, and a blocking panel acting as a bottom septum for the accommodation space and having a communication hole at the center; a cover, provided with at least one discharging port through which the additive is discharged, for openably covering the additive container; and a top cap for covering the discharging port.

An inner cap is formed inside the engagement and is inserted into the mouth by pressing, with a plurality of communication holes formed at the end thereof.

In accordance with a fourth aspect, the objects of the present invention could be achieved by providing a bottle equipped with a mixing means, the mixing means comprising: an adaptor, including: an engagement portion which can be removably combined with the mouth of the bottle body, a cylindrical support which extends from the engagement portion at a predetermined angle in both an externally radial and an axial direction, with a locking ring formed around the external circumferential surface thereof: and a lower blocking panel which blocks the flow of the contents in an axial direction and has two or more communication holes formed at equal intervals around the

axis; a cylindrical additive container, removably combined with the adaptor by locking the locking ring with a locking groove formed around an internal circumferential surface of the cylindrical additive container, including an accommodation space which is open at one end to contain one or more additives therein: and an upper blocking space which is integrally formed, defining the accommodation space in a transverse direction, and has two or more drain holes, formed at equal intervals around the axis, corresponding to the communication holes; a cover, provided with at least one discharging port through which the additive is discharged, for openably covering the additive container; and a top cap for covering the discharging port.

The communication holes and the drain holes each have a fan shape so that they are aligned with or across from each other in response to the rotation of the additive container around the adaptor.

At least one of the communication holes includes a stop flange which protrudes upwards to be inserted into the drain holes.

At least one of the drain holes includes a stop flange which protrudes downwards to be inserted into the communication holes.

In accordance with a fifth aspect, the objects of the present invention could be achieved by providing a bottle equipped with a mixing means, the mixing means comprising

an additive container having an accommodation space to contain an additive therein, a connecting means, formed at one side of the additive container, for combining the additive container with the mouth therethrough, and an outwardly protruding discharging port formed on the additive container at a position opposite the connecting means.

The additive container has an eggshell shape or a hopper shape having a wide mouth and a narrow bottom.

The additive container has a spiral soft ice cream shape, creating interest and curiosity.

In accordance with a sixth aspect, the objects of the present invention could be achieved by providing a bottle equipped with a mixing means, the mixing means comprising an additive container including an accommodation space, a connecting means, formed at one side of the additive container, an inner container compartmentalizing the accommodation space into a first space and a second space which communicate with each other, and a cover for covering the second space, with a discharging port formed thereon.

In the bottle, the inner container is comprised of a connecting portion extending inward in a radial direction from an open end, a vertical wall portion extending in an axial direction from the connecting portion, and a closing portion defining a bottom, the connecting portion having a plurality of communication holes through which the first

space communicates with the second space.

It is preferred that the inner container is formed separately from the additive container.

The inner container includes a plurality of vertical piece couples, each couple having a fitting gap therebetween, on the external side walls thereof, and is tightly fitted into the additive container, which includes a plurality of fixing ribs to be inserted into the fitting gap on the inner side walls thereof.

Each of the vertical pieces is provided with a locking protrusion which is locked to a locking groove formed on each side of the fixing rib, so that when combined with the additive container, the inner container is restricted from moving in the axial direction.

It is preferred that the inner container has a plurality of communication holes in the bottom. At this time, the position of the communication holes in the bottom of the inner container is out of the area corresponding to the first space.

The discharging port is closed or opened with a top cap. This top cap is held on the cover or the additive container by a connection cord which is directly connected to the top cap at one end and to the cover or the additive container at the other end.

Either or both of the top cap and the cover have such a pressure hole as to control the pressure generated from

the contents such as carbonated beverages.

A plurality of concentric ring-type protrusions is provided around the axis on the inner surface of the cover.

In accordance with a seventh aspect, the objects of the present invention could be achieved by providing a bottle further comprising a light emitting means which operates in the presence of electric power.

The light emitting means is embedded in a ring-type protrusion formed around the external circumferential surface of the additive container.

The engagement of the cover could be accomplished by a structure in which a seating groove is formed around the external circumferential surface of the open end of the additive container, with a ring-type locking protrusion formed at the end thereof, and a fixing ring tightly fitted to the seating groove is integrated through a support piece to the lower end of the cover, said fixing ring including a stopper which protrudes outwards in the radial direction on one side, the cover including a locking piece having a locking hole into which the stopper is inserted, formed integrally at the lower end thereof.

A locking protrusion is formed along an edge of the seating groove and engages with a locking protrusion of the cover, and a sleeve integrally and axially extends in the cover at a predetermined position spaced inward apart from the end of the cover.

In the bottle according to the fifth to seventh aspects, the adaptor or the connecting means includes an outer cap which has an internal thread that engages with the external thread, and an inner cap which extends in the axial direction inside the outer cap, defining an inlet which communicates with the interior of the bottle body, and is tightly fitted into the mouth.

In the inlet, an anti-backflow valve is provided for prevent the additive in the additive container from flowing downwards into the bottle body.

The anti-backflow valve allows the contents of the bottle body to flow into the additive container but prevents the reverse progress. The anti-backflow valve includes a valve body which extends from the inlet toward the accommodation space in the axial direction, said valve body having a closed end and a holed side wall in which a valve hole is formed, a valvule positioned within the valve body to move in the axial direction so as to open or close the valve hole, and a protrusion ring, formed around the inner circumferential surface of the inlet, preventing the valvule from being separated from the valve body.

The anti-backflow means includes an interceptive wall which protrudes toward the first space from the inlet.

In accordance with an eighth aspect, the objects of the present invention could be accomplished by providing a bottle equipped with a mixing means, the mixing means

including: an additive container whose low end is tightened to the open end of the cup body through a screw-type engagement, an inner container which, together with the cover, defines the accommodation space communicating with the interior of the cup body, and a cover having a discharging port therein which is mounted onto the additive container, opening or closing the accommodation space. Also, the inner container comprises a connecting portion extending inward in the radial direction from an open end, a vertical wall portion extending in the axial direction from the connecting portion, and a closing portion defining a bottom, said connecting portion including a plurality of communication holes to communicate the first space with the second space.

The discharging port is provided with a top cap.

The top cap is held on the cover or the additive container by a connection cord which is directly connected to the top cap 500 at one end and to a lower end of the cover or the additive container at the other end.

Brief Description of the Drawings

The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is an exploded cross sectional view showing the structure of a bottle according to a first embodiment of the present invention;

FIG. 2 is a cross sectional view showing a combined state of the bottle according to the first embodiment of the present invention;

FIG. 3 is a plan view showing a communication means of the bottle according to the first embodiment of the present invention;

FIG. 4 is an exploded cross sectional view showing the structure of a bottle according to a 1-1st embodiment of the present invention;

FIG. 5 is an exploded cross sectional view showing the structure of a bottle according to a 1-2nd embodiment of the present invention;

FIG. 6 is a cross sectional view showing the structure of an assembled bottle according to second embodiment of the present invention.

FIG. 7 is an exploded cross sectional view showing the structure of a bottle according to a 2-1st embodiment of the present invention;

FIG. 8 is an exploded cross sectional view showing the structure of a bottle according to a third embodiment of the present invention;

FIG. 9 is an exploded cross sectional view showing the structure of a bottle according to a 3-1st embodiment of

the present invention;

FIG. 10 is an exploded cross sectional view showing the structure of a bottle according to a fourth embodiment of the present invention;

FIG. 11 is an exploded perspective view showing the structure of the bottle according to the fourth embodiment of the present invention;

FIG. 12 is a cross sectional view showing a combined state of the bottle according to the fourth embodiment of the present invention;

FIG. 13 is a cross sectional view showing the structure of a bottle according to a fifth embodiment of the present invention;

FIG. 14 is a cross sectional view showing the structure of a bottle according to a 5-1st embodiment of the present invention;

FIG. 15 is a partially cross sectional view showing the structure of a bottle according to a 5-2nd embodiment of the present invention;

FIG. 16 is a cross sectional view showing the structure of a bottle according to a sixth embodiment of the present invention;

FIG. 17 is a cross sectional view showing the structure of a bottle according to a 6-1st embodiment of the present invention;

FIG. 18 is a cross sectional view showing the

structure of a bottle according to a 6-2nd embodiment of the present invention;

FIG. 19 is a cross sectional view showing the structure of a bottle according to a 6-3rd embodiment of the present invention;

FIG. 20 is a cross sectional view showing the structure of a bottle according to a 6-4th embodiment of the present invention;

FIG. 21 is a cross sectional view showing the structure of a bottle according to a 6-5th embodiment of the present invention;

FIG. 22 is an exploded cross sectional view showing the structure of a bottle according to a 6-6th embodiment of the present invention;

FIG. 23 is an exploded cross sectional view showing the structure of a bottle according to a 6-7th embodiment of the present invention;

FIG. 24 is a cross sectional view showing a combined state of the bottle according to a 6-7th embodiment of the present invention;

FIG. 25 is a cross sectional view showing the bottle in which a cover is open, according to a 6-7th embodiment of the present invention;

FIG. 26 is a partially cross sectional view showing the structure of a bottle according to the seventh embodiment of the present invention;

FIG. 27 is a partially cross sectional view showing the structure of another example of the bottle according to the seventh embodiment of the present invention; and

FIG. 28 is a cross sectional view showing the structure of a bottle according to an eighth embodiment of the present invention.

Best Mode for Carrying Out the Invention

Reference should now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. The embodiments are described below in order to explain the present invention by referring to the figures.

A bottle having a mixing means according to a first embodiment of the present invention is shown in an exploded cross sectional view of FIG. 1 illustrating the entire structure, a cross sectional view of FIG. 2 illustrating a combined state, and a plan view of FIG. 3 illustrating a communication passage.

As seen in the figures, a bottle in accordance with the first embodiment of the present invention comprises a bottle body 100 having a mouth 110, an adaptor 200 which is detachably inserted into the mouth 110, an additive container 300 which is detachably combined with the adaptor

200 at one portion and has an open accommodation space 302 to contain an additive therein at the other portion, a communication passage which is adapted to communicate the accommodation space 302 via the adaptor 200 to the inside of the bottle body 100 or to prevent this communication using a screw-type engagement, a cover 400 which openably covers the additive container 300 at the open end and has at least one discharging port 430 through which the contents of the accommodation space 302 are drained, and a top cap 500 which openably closes the discharging port 430.

The adaptor 200 comprises an outer cap 210 having negative threads on the inner side and an inner cap 220, positioned inside the outer cap 210, extending in an axial direction. The inner cap 220 is inserted into the mouth 110 by pressure and is provided with a communication hole 222 at the bottom. Also, the adaptor 200 is integrated with a connection portion 230 which extends from the outer cap 210 in the lengthwise direction and has a locking groove 232 around the inner circumferential surface thereof.

Constituting the additive container 300, a cylindrical housing 304 provides the accommodation space 302 therein and protrudes at one end (bottom in the figure) to form a first protrusion 310, with an open portion at the other end (upper portion in the figure). Provided to the bottom portion of the housing 304, a first protrusion 310 is combined with the connection portion 230, with a locking

ring 312 formed around the external circumferential surface thereof. The locking ring 312 is locked into the locking groove 232. Further protruding from the first protrusion 310 in the axial direction, a second protrusion 320, which is configured to be inserted into the inner cap 220, is integrally formed to have a smaller diameter than that of the first protrusion 310. At the bottom of the second protrusion 320, a drain hole 322 is formed corresponding to the communication hole 222.

The communication passage is structured in such a manner that while the second protrusion 320 of the additive container 300 is in surface contact with the inner cap 220 of the adaptor 220, the communication hole 222 and the drain hole 322 are coincident with or arranged crosswise with each other when the additive container 300 is turned. Thus, the accommodation space communicates with or is isolated from the interior of the bottle body, as shown in FIG. 3, so as to allow the content of the bottle body to mix with the additive of the container or to prevent the mixing.

The cover 400 is generally comprised of a hemispherical covering part 410, with a fitting groove 420 formed around the circumference of the bottom of the covering part 410, and has a discharging port 430 protruding in a pipe form at the center top of the covering part 410.

A top cap 500 is provided to openably close the discharging port 430. Preferably, the top cap 500 is fitted onto the discharging port 430 by pressing so as to readily open or close the discharging port 430. More preferably, the top cap 500, as will be explained later, is integrated via a connection cord 520 to the cover 400, so that it can be utilized without loss. The connection cord 520 may be used as a carrying strap for the bottle. Alternatively, the top cap 500 may be tightened to the discharging port 430 through a screw-type engagement. In this case, the top cap has a structure that turns with respect to the connection cord.

In the figures, reference numeral 224 represents a seal flap which functions in conjunction with a seal ring 314 to prevent the leakage of the contents.

In this structure, the bottle according to the first embodiment of the present invention is assembled as follows. When the first protrusion 310 is pressed against the connection portion 230, the locking ring 312 is locked with the locking groove 232 so that the additive container can rotate with restricted motion in the axial direction. In this state, the accommodation space 302 is filled with an additive, followed by the application of the cover 400 to the additive container and then the combination of the top cap 500 with the discharging port 430. While being stored in the accommodation space 302, the additive is sold

to consumers. After removing a cap from the beverage bottle body 100, consumers can screw the outer cap 210 to the mouth 110 to assemble a bottle as shown in FIG. 2. At this time, because the communication hole 222 does not communicate with the drain hole 322, the contents of the bottle body 100, such as coffee or soda water, are not introduced into the accommodation space 302 even when the bottle body is turned upside down.

The rotation of the additive container 300 around the adaptor may make the communication hole 222 coincident with the drain hole 322, thereby communicating the interior of the bottle body with the accommodation space 302. A user can drink the contents of the bottle body by taking off the top cap 500 and turning the bottle upside down. During passage through the accommodation space, the contents of the bottle body dissolve the additive contained in the accommodation space and then acquire appropriate tastes.

Although a description is given of a bottle which is sold containing an additive in the accommodation space 302, the present invention is not limited thereto. The bottle according to the first embodiment of the present invention may be marketed with the accommodation space 302 void. That is, consumers may fill the accommodation space with additives appropriate for their tastes after removing the cover 400 from the additive container 300, whether the additive container is combined with or separated from the

bottle body 100.

FIG. 4 is an exploded cross sectional view showing the structure of a bottle according to one version (1-1 embodiment) of the first embodiment of the present invention. This version has the same purpose as the first embodiment of the present invention.

Within the additive container 300, a guiding conduit 340 extending in the axial direction is integrally provided. The guiding conduit preferably has a hemispheric end, with a plurality of spraying holes 342 uniformly formed therethrough.

In accordance with the 1-1 embodiment, while moving along the guiding conduit, the contents of the bottle body are effused through the spraying holes 342 in such a large contact area with the additive mass as to effectively dissolve the additive.

With reference to FIG. 5, there is an exploded cross sectional view showing the structure of a bottle according to another version (1-2 embodiment) of the first embodiment of the present invention. This version provides a model which avoids the difficulty in injection molding the guiding conduit.

In this embodiment, the guiding conduit is independently formed, and fitted into the first protrusion 310 through a screw-type engagement. That is, internal threads 316 are formed on the inner surface of the first

protrusion 310, while the guiding conduit 340 is provided with external threads 344 corresponding to the internal threads 316 on the outer surface at its open terminal portion and has a plurality of spraying holes 342 formed therethrough.

As such, the guiding conduit 340 is separately molded and combined with the first protrusion 310. The 1-2 embodiment, although suffering from an increase in the number of used parts, enjoys the advantage of easy moldability and high workability.

Alternatively, the guiding conduit 340 may be combined with the first production 310 in a tight fitting manner instead of a screw-type engagement.

Referring to FIG. 6, there is a cross sectional view showing the structure of a bottle in accordance with the second embodiment of the present invention. This structure makes it easy to mix the contents with the additive and allows a consumer to drink the contents and the additive separately or mixed using a straw.

As in the previous embodiment, the bottle according to the embodiment is generally comprised of a bottle body 100, an adaptor 200, an additive container 300, and a cover 400.

The adaptor 200 comprises an engagement portion 240 which can be removably combined with the mouth of the bottle body, and a cylindrical support 250 which extends

from the engagement portion 240 at a predetermined angle in external radial and axial directions with a locking ring 252 formed around the external circumferential surface thereof. A lower blocking panel 260 which blocks the flow of the contents in the axial direction is integrated into the support 250. At the center of the lower blocking panel 260, a lower shutter ring 270 having a communication hole 272 is integrally provided.

The additive container 300 having a locking groove 352 formed around the inner circumferential surface thereof is removably combined with the adaptor 200 by locking the locking groove 352 to the locking ring 252. The additive container 300 is restricted from moving in the axial direction but can be rotated around the adaptor 200. In the additive container 300, an accommodation space 302 which is open at one end is provided to contain one or more additives therein. Defining the accommodation space 302 in the widthwise direction, an upper blocking panel 360 is integrally formed. At the center of the upper blocking panel 360, an upper shutter ring 370 having a drain hole 372 is integrally formed.

As seen in the figure, the lower blocking panel 260 of the adaptor 200 runs upwards at an angle to the center while the upper blocking panel 360 of the additive container 300 runs downwards at an angle to the center.

Protruding from a central portion of the lower

blocking panel 260, the lower shutter ring 270 may be in a cylindrical form. The communication hole 272 is preferably formed at the bottom as well as lateral sides of the cylindrical lower shutter ring 270. Likewise, the upper shutter ring 270 extends upwards from a central portion of the upper blocking panel 360 and is provided with a drain hole which is formed at opposite ends and lateral sides of the upper shutter ring 270, corresponding to the communication hole 272.

To be inserted into the upper shutter ring 360, an extension part 274 is provided on the top of the lower shutter ring 260, so as to prevent the contents from flowing out.

In the figure, reference numeral 224 represents a seal flap which functions in conjunction with a seal ring 314 to prevent the leakage of the contents.

Since the communication hole 272, the drain hole 372, the mouth 110 and the discharging port 430 are coaxially formed in the bottle of the second embodiment, a straw S can be inserted as seen in FIG. 6. In particular, whether the contents or the additive are consumed depends on the depth of insertion of the straw. For example, when the straw is inserted deeply, only the contents of the bottle body 100, e.g., the soda pop or coffee, are consumed. On the other hand, shallow insertion allows the ingestion of the additive stored in the additive container as well as

the contents. Because it has a structure such that both the communication hole 272 and the drain hole 372 are always open, this bottle itself is for sale only. When it is sold with an additive in the additive container, the bottle needs an additive element for closing the engagement portion 240, such as a stopper or sticker.

In accordance with the present invention, the lower blocking panel 260 and the upper blocking panel 360 may run upwards and downwards, respectively, to the center at such angles as to be in surface contact with each other.

FIG. 7 is an exploded cross sectional view showing the structure of a bottle according to one version (2-1 embodiment) of the second embodiment of the present invention. In this embodiment, a communication hole and a drain hole, which are provided to the lower shutter ring and upper shutter ring, respectively, are coincident with or arranged crosswise with each other by turning the additive container around the adaptor. Thus, as the bottle body is opened or closed by changing the relative position of the communication hole and the drain hole, the contents remain isolated or become mixed with the additive.

In accordance with this embodiment, the lower blocking panel 260 protrudes upwards from its central portion to form a hemispheric lower shutter ring 270. The lower shutter ring 270 has two or more communication holes which are formed at equal intervals around the axis.

Protruding upwards from a central portion of the upper blocking panel 360, an upper shutter ring 370 is configured to be a hemisphere such that it can be in surface contact with the lower shutter ring 270. Corresponding to the communication holes 272, two or more drain holes 372 are formed at equal intervals in the upper shutter ring 370 around the axis.

As the additive container rotates around the adaptor, the communication holes 272 and the drain holes 372 communicate with or across from each other. Since the holes are positioned in the center of the additive container, the contents of the bottle body are readily mixed with the additive of the additive container.

With reference to FIG. 8, there is an exploded cross sectional view showing the structure of a bottle according to a third embodiment of the present invention. In the bottle of this embodiment, an additive container is integrated into an adaptor. Thus, the bottle is generally comprised of a bottle body 100, an additive container 600, and a cover 400.

Outlined by a support 620, the additive container 600 is generally in a cylindrical form and has a funnel configuration at the bottom. At the end of the funnel, an engagement 610 is provided which is internally threaded and removably combined with the mouth 110 of the bottle body 100. Acting as a bottom septum for an accommodation space,

a blocking panel 630 is integrally formed within the support 620. The blocking panel 630 protrudes at a central portion to form a hemispherical protrusion, around the circumference of which a plurality of communication holes 642 is preferably provided. Similar to the 2-1 embodiment, this bottle itself is for sale only. When it is sold with an additive in the additive container, the bottle needs an additive element for closing the engagement 610, such as a stopper or sticker. Reference numeral 614 designates a fixing ring which is fitted onto the mouth 110 to immobilize the additive container.

FIG. 9 illustrates the structure of a bottle according to one version (3-1 embodiment) of the third embodiment in an exploded cross sectional view. In the bottle of this embodiment, not only are an additive container compartment and an adaptor compartment integrally formed, but also an inner cap is provided as an inner septum for the adaptor compartment.

In accordance with the 3-1 embodiment, the bottle has an inner cap 650 which is formed inside the engagement 610 and is inserted into the mouth 110 by pressing, with a plurality of communication holes 652 formed at the end thereof.

Press fitted into the mouth 110, the inner cap 650 guarantees excellent sealing performance. The bottle can be marketed with a sticker attached using an adhesive to the

end of the inner cap 650. For use, the sticker may be detached.

With reference to FIG. 10, there is an exploded cross sectional view showing the structure of a bottle according to a fourth embodiment of the present invention. FIGS. 11 and 12 further illustrate this bottle in an exploded perspective view and a cross sectional view showing an assembled state, respectively. The same elements as in previous embodiments are designated by the same or like numerals, with the omission of detailed descriptions therefor. This embodiment is concerned with a structure which more rapidly discharges the contents and more effectively closes or opens the communication passage upon rotation of the additive container.

Outlined by a support 250, the adaptor 200 is generally cylindrical and has a funnel configuration at the bottom, with a locking ring formed around the external circumferential surface thereof. At the end of the funnel configuration, an engagement 240 is provided which is internally threaded and removably combined with the mouth 110 of the bottle body 100. Acting as a top septum for the cylindrical adaptor, a lower blocking panel 260 is integrally formed at the top end of the support 250. Two or more communication holes 262 are formed at equal intervals in the lower blocking panel 260.

The additive container 300 comprises a cylindrical

housing 350 defining an accommodation space 302 and has a locking groove 352 which is formed around the inner circumferential surface of the cylindrical housing 350 to lock with the locking ring 252. Within the housing 350, an upper blocking panel 360 is integrally formed, compartmentalizing the accommodation space in two in the transverse direction. Also, two or more drain holes 362 corresponding to the communication holes 262 are provided at equal intervals in the upper blocking panel 360.

As shown in FIG. 11, the communication holes 262 and the drain holes 362 may each have a fan shape so that they coincide with or across from each other in response to the rotation of the additive container 300 around the adaptor 200.

At least one of the communication holes 262 includes a stop flange 262a which protrudes upwards to be inserted into the drain holes 362. Likewise, at least one of the drain holes 362 is provided with a stop flange 362a which protrudes downwards to be inserted into the communication holes 262. If any of the holes has a stop flange, the same effect can be obtained whether the stop flange is provided to the communication holes or the drain holes.

In the fourth embodiment, the communication holes and the drain holes are large enough to allow the additive and the content to readily mix with each other.

With reference to FIG. 13, there is a cross sectional

view showing the structure of a bottle according to a fifth embodiment of the present invention. As seen, the bottle includes an additive container which has an eggshell shape. In accordance with this embodiment, the bottle comprises a bottle body 100 having a mouth 110 with an external thread 112 formed around the external circumferential surface thereof, and an additive container 300 having an accommodation space 302 to contain an additive therein. The additive container 300 is provided at a predetermined position with an engagement 200 which is fitted onto the mouth 110 of the bottle body 100. Further, the additive container 300 includes an outwardly protruding discharging port 304 at a position opposite the engagement 200.

The engagement 200 consists of an outer cap 210 having an internal thread 212 engaged with the external thread 112 formed on the external circumferential surface of the mouth, and an inner cap 220 extending in the axial direction inside the outer cap 210, defining an inlet 222 which communicates with the interior of the bottle body 100 and is tightly fitted into the mouth 110.

Having an eggshell shape, the additive container 300 is preferably made from a flexible material which is readily deformed by external force.

The discharging port 304, even though provided at an off-center position in the figure, may be formed at any position. When designing the bottle, the length and

diameter of the discharging port must be taken into consideration. That is, the length and diameter may be determined on the basis of the output rate according to the inclination angle of the bottle.

The additive container containing ice cream in the accommodation space 302 may be displayed in a showcase, with aluminum foil closing the inlet 222 and the discharging port 304. After removing the aluminum foil from the inlet 222 first, a consumer may tighten the additive container to the mouth 110 using the screw type engagement and then open the discharging port 304 to enjoy the taste provided.

When the bottle body is turned upside down, the contents such as soda pop are effused from the discharging port, dissolving the ice cream contained in the container.

FIG. 14 illustrates one version (5-1st) of the fifth embodiment of the present invention (the same elements as in the fifth embodiment are designated by the same reference numerals, without descriptions therefor. The bottle of this embodiment is characterized by a backflow preventer which functions to prevent the additive of the additive container 300 from flowing downwards into the bottle body 100.

In the inlet, an anti-backflow valve is provided to allow the contents of the bottle body to flow into the additive container but prevent the reverse progress.

The anti-backflow valve includes a valve body 230 which extends from the inlet 222 toward the accommodation space 301 in the axial direction. The valve body 230 has a closed end and a holed side wall in which a valve hole 232 is formed. Within the valve body 230, a valvule 240 is positioned to move in the axial direction so as to open or close the valve hole 232. Formed around the inner circumferential surface of the inlet 222, a protrusion ring 234 prevents the valvule 240 from being separated from the valve body 230.

The valvule 240 is depicted to have a lozenge-shaped cross section, but is not limited thereto. For example, the valvule 240 may be a sphere.

When the bottle body 100 stands upright or the mouth 110 is directed upwards, the valvule 240 descends due to the inherent weight of the protrusion ring to close the valve hole 232, thereby preventing the additive from flowing downwards into the bottle body 100. On the other hand, when the bottle body 100 is turned upside down, the valvule 240 goes down to the closed end to open the valve hole 232, so that the contents of the bottle body can flow into the accommodation space and effuse out of the discharging port.

Therefore, the installation of the anti-backflow valve in the inlet 222 makes it possible to prevent the additive from flowing into the bottle body from the

accommodation space 302. In the case that the additive container is filled with ice cream, its easy fusion at ambient temperatures provides greater opportunity to mix with the contents of the bottle body. The mixture of the melted additive and the contents, although effected, does not guarantee the tastes intended by the providers.

FIG. 15 is a view showing another version (5-2 embodiment) of the fifth embodiment of the present invention (in which the same elements as in Example 5 are designated by the same reference numerals, without an additional description therefor). This embodiment highlights the appearance of the additive container.

In this embodiment, the additive container 300 has an ice cream appearance. This increases product recognition as well as enhances brand images. Particularly, children may be attracted to such characteristic appearances.

Although shown as an ice cream shape, the additive container may be molded into various shapes. For example, if the additive emits an apple fragrance or provides an apple taste, the additive container may be in the shape of an apple. Of course, animal characters may be applied to the additive container.

With reference to FIGS. 16 to 18, the structure of a bottle according to a sixth embodiment of the present invention is illustrated (in which the same elements as in the previous embodiments are designated by the same

reference numerals, without an additional description therefor). In this embodiment, different configurations are given to the additive container and the cover and the accommodation space are divided into two.

The bottle according to this embodiment comprises a bottle body 100, an engagement 200 fitted onto the mouth of the bottle body, an additive container 300, integrated into the engagement 200, having an accommodation space which is compartmentalized into a first space 302a and a second space 302b by an inner container 310, and a cover 400 for covering the second space 302, with a discharging port 402 formed thereon.

The inner container 310 is comprised of a connecting portion 312 extending inward in the radial direction from an open end, a vertical wall portion 314 extending in the axial direction from the connecting portion 312, and a closing portion 316 defining a bottom. In the connecting portion, a plurality of communication holes 302a is formed to communicate the first space 302a with the second space 304a.

A top cap 500 is provided on the discharging port 402, functioning to open or close the second space 302b.

When being removed from the discharging port 402, the top cap 500 does not become separated from the bottle because it is connected to a connecting cord 520, one end of which is fixed to a predetermined portion of the cover.

Also, the cap 500 has a pressure hole 510. The same effect can be obtained by the formation of a pressure hole in the cover 400.

A plurality of hooking protrusions 320 is formed around the circumferential surface of the open end of the additive container 300. Correspondingly, a plurality of elastic hooks 412 hooked on the hooking protrusions 320 are formed in the lower end of the hemispherical covering part 410.

When the bottle body having this structure according to the sixth embodiment is turned upside down, the contents, after being introduced into the first space 302a, flow along the vertical side wall 314 and then into the second space 302b through the communication hole 312a. Thereafter, the contents dissolve the additive contained in the second space 302b and flow out of the discharging port 402.

When the bottle is turned from an upside down state to an upright state, the contents introduced into the second space 302b for the most part collect in the lower portion of the second space 302b while only a small portion returns back to the bottle body 100. Thus, the contents remaining in the second space 302b dissolve the lower portion of the additive confined within the second space 302b. When the bottle is tilted again, the contents sufficiently mixed with the additive are first effused, so

that the user can enjoy the taste. Particularly, the bottle of this embodiment provides a solution to the problem caused by the entrance of the additive into the bottle body 100.

FIG. 17 shows the structure of a bottle according to one version (6-1) of the sixth embodiment of the present invention (in which the same elements as in the previous embodiments are designated by the same reference numerals, without an additional description therefor). This embodiment is characterized by a different anti-backflow means.

In this bottle, an interceptive wall 230 protrudes toward the first space 302a from the inlet 222, with a gap in the bottom of the inner container 310.

In accordance with this embodiment, the mixture of the contents and the additive, even if remaining in the first space 302a, scarcely flows back into the bottle body due to the interceptive wall, so that the contents can be kept pure in the bottle body. This structure is particularly useful when an additive is present in a large amount. Because the second space 302b is full of additive at first, the additive is ready to flow down through the communication hole 312a. As the amount of additive introduced into the first space increases, there is an increasing possibility that the contents become turbid.

In FIG. 18, the structure of a bottle according to

another version (6-2 embodiment) of the sixth embodiment of the present invention is depicted (in which the same elements as in the 6-1 embodiment are designated by the same reference numerals, without additional description therefor). The structure of this bottle is suitable for the case where the second space contains ice.

The inner container defining the second space 302b has a plurality of communication holes 312a in the connecting portion 312 and a plurality of communication holes 316a in the bottom 316. The position of the communication holes 316a in the bottom 316 of the inner container is out of the area corresponding to the inlet, that is, beyond the interceptive wall 230. In this structure, the contents which have been in the second space 302 are prevented from re-entering the bottle body when they fall from the second space into the first space through the communication holes 316a.

When the bottle is stood upright after the contents of the bottle body flow into the second space through the communication holes 312 of the connection portion 312, the remaining contents which are not discharged out of the discharging port 402 gather in the second space 302 and are introduced through the communication holes 316a of the bottom 316 into the first space 302a. These returning contents cannot flow into to the bottle body due to the interceptive wall, but remain in the first space 302a.

Subsequently, when the bottle body is again turned upside down, the contents remaining in the first space 302a are first introduced into the second space 302b.

As mentioned above, the 6-2nd embodiment of the present invention is suitable for the case in which the additive is ice. That is, when the contents inflowing from the bottle body 100 are brought into contact with the ice contained in the second space 302, the consumer enjoys cool tastes. Additionally, because the contents which are not discharged but remain in the second space 302b go back to the first space 302a through the communication holes 316a, the ice is prevented from being melted by the remaining contents in the second space 302.

FIG. 19 shows the structure of a bottle according to a further version (6-3) of the sixth embodiment of the present invention (in which the same elements as in the 6-1 embodiment are designated by the same reference numerals, without additional description therefor). The bottle of this embodiment is featured by an enlarged volume of the first space in the additive container 300.

The additive container 300 has a bottom 300 which is inclined downwards at a predetermined angle from the outer cap 210.

Accordingly, as shown in FIG. 19, the bottom, together with the interceptive wall 230, increases the volume of the first space. This structure can store a

significant amount of contents without the help of the interceptive wall 230. Particularly, the external circumference of the additive container 300 is disposed near that of the bottle body 100, so that the bottle looks neat in its entirety and has a uniform appearance.

With reference to FIG. 20, a bottle structure is depicted according to a still further version (6-4th) of the sixth embodiment of the present invention (in which the same elements as in the sixth embodiment are designated by the same reference numerals, without additional description therefor). The feature of this embodiment resides in that the inner surface of the cover is provided with baffles impeding the flow of the contents so as to increase the mixing efficiency between the contents and the additive.

In accordance with this embodiment, a plurality of concentric ring-type protrusions 420 is provided around the axis on the inner surface of the cover 400. The ring-type protrusions 420 are arranged at equal intervals and each is inclined at an acute angle against the flow of the contents.

The ring-type protrusions 420 function to prolong the time during which the contents are influent through the communication holes 312a and cause turbulent content flow, so that the influent contents flow with prolonged contact with the additive, thereby improving the mixing efficiency therebetween.

In the 6-4th embodiment of the present invention, the problem expected where the contents flowing through the communication holes 312a into the second space 302b flow without resistance and are discharged out of the discharging port 402, that is, the problem in which the contents are discharged unmixed, can be solved.

FIG. 21 shows the structure of a bottle according to still another version (6-5th) of the sixth embodiment of the present invention (in which the same elements as in the fifth and sixth embodiments are designated by the same reference numerals, without additional description therefor). The bottle is based on the structure described in the sixth embodiment while adopting the anti-backflow means of the fifth embodiment.

In the inlet 222, an anti-backflow valve, including a valve body 230 and a valvule 240, is provided. The valve body 230 has a valve hole 232. Formed around the inner circumferential surface of the inlet 222, a protrusion ring 234 prevents the valvule 240 from departing from the valve body 230. As seen in the figure, the valve body 230 is in close contact with the bottom of the second space 302b or is integrated into the second space 302b.

When the bottle in accordance with the 6-5th embodiment of the present invention is turned upside down, the valvule 240 moves down due to its inherent weight to open the valve hole 232, so that the contents of the bottle

body can flow into the accommodation space and effuse out of the discharging port. On the other hand, when the bottle is stood upright or the mouth 110 is directed upwards, the valvule 240 descends due to its inherent weight to close the valve hole 232, thereby preventing the additive from flowing downwards into the bottle body 100. At this time, the contents present in the second space are completely confined by the vertical side wall 314 of the inner container 310, so that the contents of the bottle body 100 are kept more pure.

FIG. 22 is a view of a bottle according to yet another version (6-6) of the sixth embodiment of the present invention (in which the same elements as in the fifth and sixth embodiments are designated by the same reference numerals, without an additional description therefor). The feature of this embodiment resides in that the inner container 310 is separately formed to be more moldable, and is then combined with the additive container in a tight fitting manner.

Separately from the additive container 300, an inner additive container 310 is molded. A plurality of vertical piece couples 350, each couple having a fitting gap 352 therebetween, is provided on the external side walls of the inner container 310 while a plurality of fixing ribs 360 to be inserted into the fitting gap 352 is formed on the inner side walls of the additive container 300. A locking

protrusion 354 is provided on each vertical piece 350. Correspondingly, a locking groove 362 to which the locking protrusion 354 is locked is formed on each side of the fixing rib 360. Accordingly, when combined with the additive container, the inner container is restricted from moving in the axial direction.

In the 6-6th embodiment of the present invention, when the inner container is inserted into the additive container 300 with the fixing rib 360 targeting the fitting gap 352, the fixing rib 360 interferes with the locking protrusion 354 to further open the couple of the vertical pieces. Subsequently, when the fixing rib 360 is further inserted into the fitting gap until the locking protrusion 354 reaches the locking groove 362, the vertical pieces 350 are elastically restored to combine with the fixing rib 360. Preferably, the inner container is structured to put the bottom of the connection portion 312 on the top of the fixing rib 360 in synchronicity with the combination of the locking protrusion 354 with the locking groove 362. Additionally, the bottom 316 of the inner container 310 must be spaced apart at a predetermined distance from the interceptive wall 230 when the connection portion 312 is put on the fixing rib 360.

Structured to tightly fit the inner container 310 to the additive container 300, the bottle according to the 6-6th embodiment can be readily assembled and is easy to

clean.

With reference to FIGS. 23 to 25, the structure of a bottle according to a 6-7th embodiment of the present invention (in which the same elements as in the 6-6th embodiment are designated by the same reference numerals without additional description therefor) is shown. This embodiment features an engagement structure between the cover 400 and the additive container 300.

In this embodiment, a seating groove 370 is formed around the external circumferential surface of the open end of the additive container 300, with a ring-type locking protrusion 372 formed at the end thereof. A fixing ring 430 tightly fitted to the seating groove 370 is integrated through a support piece 432 to the lower end of the cover 400. A stopper 434 which protrudes outwards in the radial direction is formed on one side of the fixing ring 430. A locking piece 416 having a locking hole 416a into which the stopper 434 is inserted is integrally provided to the lower end of the cover 400. Also the cover has a locking protrusion 414 to which the locking protrusion is locked.

A sleeve 440 integrally and axially extends in the cover 400 at a predetermined position spaced inward apart from the end of the cover 400. An extension part 442 is integrally formed at a part of the sleeve 440 which is provided with the support piece 432. The extension part 442 extends downward such that it has an inclined part.

In each of the 6-7th embodiment of the present invention, an inner container 310 is assembled in the additive container 300 as shown in FIG. 24. A fixing ring 430 is fitted around a seating groove 370 at a position above the top of the inner container 310. The cover 400 is rotatable around the support piece 432 so that the cover 400 can be opened as shown in FIG. 13c or closed and firmly locked as shown in FIG. 13b in which the stopper 434 engages with the locking hole 416a of the locking piece 416. The locking piece 416 is made of a plastic material so that the piece 416 can be elastically deformed, thus elastically engaging with or disengaging from the stopper 434. The extension part 442 acts as a position guider to determine the assembling position of the cover 400 when the cover 400 is assembled with the storage container 300.

Thus, the cover 400 is not undesirably detached from the additive container 300, so that the cover 400 can be easily handled and managed by a user, and can be firmly locked to the additive container 300 when necessary.

FIG. 26 shows the structure of a bottle according to a seventh embodiment of the present invention (in which the same elements as in the sixth embodiment are designated by the same reference numerals, without additional description therefor). The feature of this embodiment is a light emitting means provided on the external circumference of the cover.

On the external circumference of the cover, a ring-type protrusion 450 is provided, along which a plurality of light emitting diodes 452 are arranged. A battery 530 is installed within the top cap 500, with a circuit board 532 positioned atop the battery 530. The circuit board 532 is finished with a cap 534.

From the battery 530, electric power is supplied to the light emitting diodes 452 through an electric wire 538 embedded in the connection cord 520.

Additionally, a switch 536 which is exposed from the lower end of the top cap 500 is provided on the circuit board 532. Whenever the top cap 500 is closed, the switch is pressed by the discharging port 402 to connect or disconnect the battery power.

When the top cap 500 is opened, the switch is in an ON-state so as to supply electric power to the light emitting diodes 452. According to the design of the circuit board 532, the light may be emitted when the top cap 500 is opened or closed. In addition, music IC may be further provided to the bottle, so that music may be generated along with the light.

The application of the light emitting means to the surface of the bottle in accordance with the seventh embodiment of the present invention may create interest and curiosity in the product, particularly at night.

With reference to FIG. 27, a bottle is illustrated in

accordance with a 7-1st embodiment of the present invention, featuring a light emitting means provided on the additive container. As seen in the figure, a plurality of light emitting diodes 382 is embedded in a ring-type protrusion 380 formed around the external circumferential surface of the additive container 300. The connecting cord 520 is connected to the ring-type protrusion 380. The rest of the structure is the same as in FIG. 26.

FIG. 28 shows a structure according to an eighth embodiment of the present invention (in which the same elements as in the sixth embodiment are designated by the same reference numerals, without an additional description therefor). This embodiment features a mixing means adapted to be useful for wide-mouth containers such as cups.

A cup body 100 is provided which has an open end 710 with an external thread 712 formed around an external circumferential surface thereof. Likewise, a corresponding internal thread 390 is formed around an internal surface of a lower end of an additive container 300. The cup body 100 is tightened to the additive container 300 through a screw type engagement. Within the additive container 300, an inner container is integrally formed which defines the accommodation space 302 together with the cover and has therein communication holes 312a for communicating the accommodation space 302 with the interior of the cup body 700. A cover 400 having a discharging port 402 therein is

mounted onto the additive container 300, opening or closing the accommodation space 302. A top cap 500 is provided atop the discharging port 402 and is settled on the cover 400 or the additive container 300 through a connection cord 520 which is directly connected to the top cap 500 at one end and to the cover 400 or the additive container 300 at the other end. The engagement between the additive container 300 and the cup body 700 may be accomplished in a tight fitting manner instead of a screw-type manner.

In this embodiment, an additional adaptor (not shown) may be provided for coping with changes in the size of the cup body mouth. When the cup body has a mouth size different from that of the additive container, an adaptor is used to connect them, thereby enhancing the compatibility of the bottle. Additionally, a sealable hole to which a straw can be applied may be provided in the bottom 316 of the inner container 310 as shown in FIG. 6. Also, the bottom 316 of the inner container 310 may be stepped. Straws are individually applied to the steps formed. A deep step may be used as a space for containing ice cream therein while a shallow step may be a passage through which the contents of the cup body 700 are directly consumed by use of a straw. In this regard, the content of the cup body 700 can be consumed using a straw penetrating through the shallow step while another straw is applied to the deep step to consume the ice cream or a mixture of the

ice cream and the contents. For this, of course, two straws are used (in this case, the top cap must have two holes for respectively adopting the two straws): one penetrates through the shallow bottom to remove the contents of the cup body 700 therethrough: the other is applied to the shallow bottom to directly remove ice cream or an ice cream mixture (coke float) therethrough. The transportation of the contents from the cup body into the accommodation space may utilize the communication holes when the cup body is pressed or a passage formed when a straw penetrates through the bottom of the additive container. The transportation passages may be selected by the manufacturer or the user.

The eighth embodiment of the present invention is suitable for wide-mouth bottles and, particularly when contents and an additive are consumed simultaneously at home. For example, because contents are difficult to put into a narrow-mouth bottle at home, the eighth embodiment of the present invention is very useful.

Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Industrial Applicability

As described above, the present invention provides a bottle comprising a bottle body for containing contents therein, an additive container for containing an additive therein, a cover, capped with a top cap, for covering the additive container and defining an accommodation space together with the additive container, and an engagement for combining the bottle body with the additive container and optionally communicating the interior of the bottle body with the accommodation space, which can be distributed on the market while the accommodation space retains an additive. Therefore, the bottle of the present invention has a structure which allows at least two different materials to be carried and efficiently mixed immediately before ingestion.

Additionally, the bottle body may be separated from the additive container so that different materials can be separately stored and then combined with each other upon use. Accordingly, the bottle of the present invention can open a new market with greatly enhanced storage performance and economical advantages.